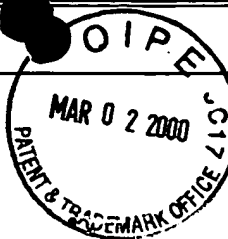


FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

LIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)


ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
JLL	3,226,846	01/04/1966	Wood			
JLL	3,304,434	02/14/1967	Koster			
JLL	3,541,541	11/17/1970	Engelbart			
JLL	3,748,366	07/24/1973	Rader et al.			
JLL	3,775,865	12/04/1973	Rowan			
	Des. 233,238	10/15/1974	Reid et al.			
JLL	4,321,047	03/23/1982	Landis			
JLL	4,360,345	11/23/1982	Hon			
JLL	4,409,479	10/11/1983	Sprague et al.			
JLL	4,459,113	07/10/1984	Boscaro Gatti et al.			
JLL	4,490,810	12/25/1984	Hon			

RECEIVED  
MAR - 3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
SU 1124-372-A	11/15/1984	Soviet Union			
EP 169-776-A	01/29/1986	Europe			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

JLL	GINSBURG, <i>This Shot Won't Hurt At All</i> , Washington Business, July 6, 1998.
JLL	MERRIL, <i>Virtual and Augmented Reality in Medicine</i> , Proceedings of the IEEE, Vol. 86, No. 3, March 1998, pp. 471-473.
JLL	HAHN et al., <i>Training Environment for Inferior Vena Caval Filter Placement</i> , Medicine Meets Virtual Reality, January 1998, pp. 291-296.
JLL	Immersion Human Interface Corporation, <i>Programmer's Technical Reference Manual: Immersion Probe and Personal Digitizer</i> , May 1994, pp. 1-80.
JLL	KEGIER, <i>Surgeons Turn to Surgical Simulation Via Virtual Reality to Practice New Procedures</i> , Laproscopy News, November 1994, pp. 6-8.
JLL	MERRIL et al., <i>Cyber Surgery: Cutting Costs, Sewing Benefits</i> , Virtual Reality Special Report, Summer, 1994, pp. 39-42.

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
JLS	4,642,055	02/10/1987	Saliterman			
JLS	4,712,101	12/08/1987	Culver			
JLS	4,726,772	02/23/1988	Amplatz			
JLS	Des. 392,878	03/31/1988	Nordstrom et al.			
JLS	4,773,865	08/27/1988	Baldwin			
JLS	4,767,333	08/30/1988	Born			
JLS	4,789,340	12/06/1988	Zikria			
JLS	4,804,328	02/14/1989	Barrabee			
JLS	4,807,158	02/21/1989	Blanton et al.			
JLS	4,867,168	09/19/1989	Stoor et al.			
JLS	4,867,685	09/19/1989	Brush et al.			

RECEIVED  
MAR - 3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
FR 2 592 514	07/03/1987	France			
SU 1335-994-A	11/30/1987	Soviet Union			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

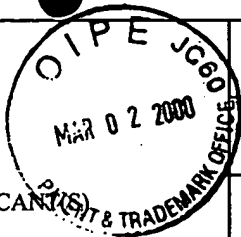
JLS		HON, <i>Realistic Medical Simulations</i> , Virtual Reality World, July/August, 1994, pp. 59-62.
JLS		SATAVA, <i>The Role of Virtual Reality in Medicine of the 21<sup>st</sup> Century</i> , Virtual Reality Systems, Vol. 1, No. 2, Fall 1993, pp. 64-67.
JLS		MERRIL et al., <i>Virtual Heart Surgery: Trade Show and Medical Education</i> , Virtual Reality World, July/August 1994, pp. 55-57.
JLS		MERRIL et al., <i>Virtual Reality for Tradeshows and Individual Physician Training</i> , Virtual Reality Systems, Spring 1994, pp. 40-44.
JLS		ROSENBERG, <i>Medical Applications of Virtual Reality</i> , Virtual Reality Systems, Vol. 1, No. 3, Spring 1994, pp. 48-50.

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
LZL	4,879,668	11/07/1989	Cline et al.			
LZL	4,907,973	03/13/1990	Hon			
LZL	4,936,862	06/26/1990	Walker et al.			
LZL	5,044,956	09/03/1991	Behensky et al.			
LZL	5,077,608	12/31/1991	Dubner			
LZL	5,086,401	02/04/1992	Glassman et al.			
LZL	5,099,846	03/31/1992	Hardy			
LZL	5,112,228	05/12/1992	Zouras			
LZL	5,130,794	07/14/1992	Ritchey			
LZL	5,137,458	08/11/1992	Ungs et al.			
LZL	5,149,270	09/22/1992	McKeown			

RECEIVED  
MAR -3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
DE 3834-553-A	04/12/1990	Germany			
SU 1732371-A1	05/07/1992	Soviet Union			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

LZL	MERRIL et al., <i>Surgical Simulation Using Virtual Reality Technology: Design, Implementation, and Implications</i> , Surgical Technology International III, Fall 1994, pp. 53-60.
LZL	TAUBES, <i>Surgery in Cyberspace</i> , Discover, December, 1994, pp. 85-94.
LZL	KRUEGER et al., <i>The Responsive Workbench</i> , IEEE Computer Graphics and Applications, May, 1994, pp. 12-15.
LZL	JACKSON et al., <i>Force Feedback and Medical Simulation</i> , Interactive Technology and the New Paradigm for Healthcare, January 1995, pp. 147-151.
LZL	COVER et al., <i>Interactively Deformable Models for Surgery Simulation</i> , IEEE Computer Graphics & Applications, Vol. 13, No. 6, November 1993, pp. 68-75.
LZL	OKIE, <i>Out of Body Medicine</i> , Washington Post, November 5, 1996, pp. 12-14, 17.

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

Sheet 4 of 12

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)PATENT & TRADEMARK OFFICE  
PATENT DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
<i>LSL</i>	5,185,561	02/09/1993	Good et al.			
<i>LSL</i>	5,205,289	04/27/1993	Hardy et al.			
<i>LSL</i>	5,220,260	06/15/1993	Schuler			
<i>LSL</i>	5,222,499	06/29/1993	Allen et al.			
<i>LSL</i>	5,261,404	11/16/1993	Mick et al.			
<i>LSL</i>	5,273,038	12/28/1993	Beavin			
<i>LSL</i>	5,295,694	03/22/1994	Levin			
<i>LSL</i>	5,311,422	05/10/1994	Loflin et al.			
<i>LSL</i>	5,320,326	06/14/1994	Ju et al.			
<i>LSL</i>	5,320,537	06/14/1994	Watson et al.			
<i>LSL</i>	5,320,538	06/14/1994	Baum			

RECEIVED  
MAR -3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
<i>LSL</i> EP 0 485 766	05/20/1992	Europe			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

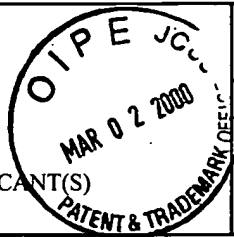
<i>LSL</i>		SMITH, <i>Scanning the Technology</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 474-478.
		DAWSON et al., <i>The Imperative for Medical Simulation</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 479-483.
<i>LSL</i>		SATAVA et al., <i>Current and Future Applications of Virtual Reality for Medicine</i> , Proceedings of IEEE, Vol. 86, No. 3, March 1998, pp.484-489.
		BRO-NIELSEN, <i>Finite Element Modeling in Surgery Simulation</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 490-503.
<i>LSL</i>		ACKERMAN, <i>The Visible Human Project</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 504-511.
		DELINGETTE, <i>Toward Realistic Soft Tissue Modeling in Medical Simulation</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 512-523.

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
JLS	5,322,441	06/21/1994	Lewis et al.			
JLS	5,333,106	07/26/1994	Lanpher et al.			
JLS	5,338,198	08/16/1994	Wu et al.			
JLS	Des. 272,833	02/28/1994	Van Assche et al.			
JLS	5,343,871	09/06/1994	Bittman et al.			
JLS	5,354,202	10/11/1994	Moncrief et al.			
JLS	5,376,007	12/27/1994	Zirm			
JLS	5,377,116	12/27/1994	Wayne et al.			
JLS	5,385,474	01/31/1995	Brindle			
JLS	5,389,865	02/14/1995	Jacobus et al.			
JLS	5,391,081	02/21/1995	Lampotang et al.			

RECEIVED  
MAR - 3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
WO 95/02233	01/19/1995	WIPO			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

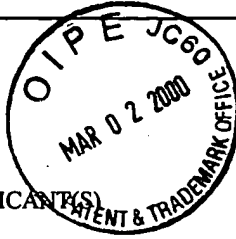
JLS	CHAN et al., <i>Force Feedback for Surgical Simulation</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 524-530.
JLS	SOFERMAN et al., <i>Advanced Graphics Behind Medical Virtual Reality: Evolution of Algorithms, Hardware, and Software Interfaces</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 531-554.
JLS	SHAHIDI et al., <i>Clinical Applications of Three Dimensional Rendering of Medical Data Sets</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 555-568.
JLS	HILL et al., <i>Telepresence Technology in Medicine: Principles and Applications</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 569-580.

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
LHL	5,403,191	04/04/1995	Tuason			
LHL	5,414,337	05/09/1995	Schuler			
LHL	5,438,529	08/01/1995	Rosenberg et al.			
LHL	5,451,924	09/19/1995	Massimino et al.			
LHL	5,454,722	10/03/1995	Holland et al.			
LHL	5,459,382	10/17/1995	Jacobus et al.			
LHL	5,482,472	01/09/1996	Garoni et al.			
LHL	5,483,254	01/09/1996	Powell			
LHL	5,483,961	01/16/1996	Kelly et al.			
LHL	5,509,810	04/23/1996	Schertz et al.			
LHL	5,510,832	04/23/1996	Garcia			

RECEIVED  
MAR -3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
WO 96/16397	05/30/1996	WIPO			
WO 96/28800	09/19/1996	WIPO			

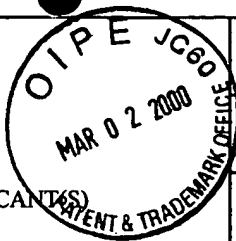
## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
JLL	5,513,992	05/07/1996	Refait			
JLL	5,518,406	05/21/1996	Waters			
JLL	5,531,227	07/02/1996	Schneider			
JLL	5,546,943	08/20/1996	Gould			
JLL	5,552,995	09/03/1996	Sebastian			
JLL	5,559,412	09/24/1996	Schuler			
JLL	5,576,727	11/19/1996	Rosenberg et al.			
JLL	5,589,854	12/31/1996	Tsai			
JLL	5,593,306	01/14/1997	Kohnke			
JLL	5,609,485	03/11/1997	Bergman et al.			
JLL	5,623,582	04/22/1997	Rosenberg			

RECEIVED  
MAR - 3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
EP 0 800 804	10/15/1997	Europe			
WO 98/10387	03/12/1998	WIPO			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
JLB	5,629,594	05/13/1997	Jacobus et al.			
JLB	5,666,138	09/09/1997	Culver			
JLB	5,682,886	11/04/1997	Delp et al.			
JLB	5,687,259	11/11/1997	Linford			
JLB	5,691,898	11/25/1997	Rosenberg et al.			
JLB	5,701,140	12/23/1997	Rosenberg et al.			
JLB	5,704,791	01/06/1998	Gillio			
JLB	5,721,566	02/24/1998	Rosenberg et al.			
JLB	5,722,836	03/03/1998	Younker			
JLB	5,724,264	03/03/1998	Rosenberg et al.			
JLB	5,731,804	03/24/1998	Rosenberg			

RECEIVED  
MAR -3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
WO 98/58308	12/23/1998	WIPO			
EP 0 908 836	04/14/1999	Europe			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

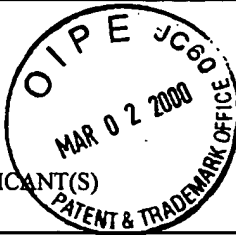

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant



FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
LH	5,734,373	03/31/1998	Rosenberg et al.			
LH	5,739,811	04/14/1998	Rosenberg et al.			
LH	5,740,802	04/21/1998	Nafis et al.			
LH	5,742,278	04/21/1998	Chen et al.			
LH	5,755,577	05/26/1998	Gillio			
LH	5,766,016	06/16/1998	Sinclair et al.			
LH	5,767,839	06/16/1998	Rosenberg			
LH	5,768,134	06/16/1998	Swaelens et al.			
LH	5,769,640	06/23/1998	Jacobus et al.			
LH	5,791,908	08/11/1998	Gillio			
LH	5,800,177	09/01/1998	Gillio			

RECEIVED  
MAR -3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
WO 99/25536	05/27/1999	WIPO			
WO 99/38141	07/29/1999	WIPO			

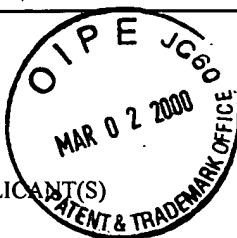
## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
LZL		5,800,178	09/01/1998	Gillio			
LZL		5,800,179	09/01/1998	Bailey			
LZL		5,805,140	09/08/1998	Rosenberg et al.			
LZL		5,807,115	09/15/1998	Hu			
LZL		5,821,920	10/13/1998	Rosenberg et al.			
LZL		5,825,308	10/20/1998	Rosenberg			
LZL		5,825,941	10/20/1998	Linford et al.			
LZL		5,828,197	10/27/1998	Martin et al.			
LZL		5,853,292	12/29/1998	Eggert et al.			
LZL		5,873,731	02/23/1999	Prendergast			
LZL		5,873,732	02/23/1999	Hasson			

RECEIVED  
MAR -3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
LZL		WO 93/08517	04/29/1993	WIPO			
LZL		WO 95/02801	01/26/1995	WIPO			

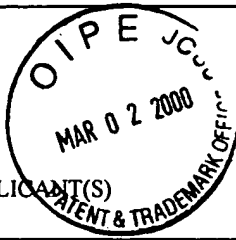
## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
<i>JLA</i>		5,880,976	03/09/1999	DiGioia, III et al.			
<i>JLA</i>		5,882,206	03/16/1999	Gillio			
<i>JLA</i>		5,882,207	03/16/1999	Lampotang et al.			
<i>JLA</i>		5,890,908	04/06/1999	Lampotang et al.			
<i>JLA</i>		5,891,131	04/06/1999	Rajan et al.			
<i>JLA</i>		5,909,380	06/01/1999	Dubois et al.			
<i>JLA</i>		5,941,710	08/24/1999	Lampotang et al.			
<i>JLA</i>		5,945,056	08/31/1999	Day et al.			
<i>JLA</i>		5,947,743	09/07/1999	Hasson			
<i>JLA</i>		5,951,301	09/14/1999	Yunker			
<i>JLA</i>		5,956,040	09/21/1999	Asano et al.			

RECEIVED  
MAR -3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT

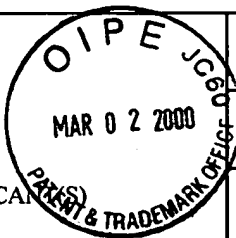
## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT  
(Use several sheets if necessary)

ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
LS	5,967,790	10/19/1999	Strover et al.			
LS	5,995,738	11/30/1999	DiGioia, III et al.			

RECEIVED  
MAR - 3 2000  
TECH CENTER 2700

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

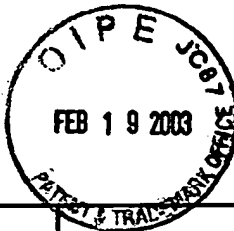
John L. Schomayer

DATE CONSIDERED

4/23/03

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant

Please type a plus sign (+) inside this box →



PTO/SB/08A (08-00)

Substitute for form 1449A/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)				<i>Complete if Known</i>	
				Application Number	09/237,969
				Filing Date	January 27, 1999
				First Named Inventor	David ALEXANDER
				Group Art Unit	3714
				Examiner Name	J. Sotomayor
Sheet	1	of	1	Attorney Docket Number	IMMR023/01US (NEW)

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code <sup>2</sup> (if known)		

FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
<i>JLS</i>	1	GB	2288686	A	University of Bristol	10-25-1995	
<i>JLS</i>	2	GB	2252656	A	KeyMed	08-12-1992	
<i>JLS</i>	3	EP	0970714	A2	Mitsubishi	01-12-2000	
<i>JLS</i>	4	WO	98/03954	A1	Colorado Medical Simulators, Inc.	01-29-1998	

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>

Examiner Signature	<i>John L. Sotomayor</i>	Date Considered	<i>4/23/03</i>
--------------------	--------------------------	-----------------	----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number.

<sup>2</sup> See attached Kinds of U.S. Patent Documents.

<sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

<sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

<sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Please type a plus sign (+) inside this box →

Substitute for form 1449A/PTO

FEB 26 2003

Complete if Known

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 3

Application Number 09/237,969  
Filing Date January 27, 1999  
First Named Inventor David ALEXANDRE et al.  
Group Art Unit 3714  
Examiner Name J. Sotomayor  
Attorney Docket Number IMMR-023/01US

RECEIVED  
MAR 03 2003

TECHNOLOGY CENTER R3700  
MAR 03 2003

## U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code <sup>2</sup> (if known)		
JLL	A1	5,785,630		Bobick, et al.	07/28/1998
	A2	5,766,016		Sinclair et al.	06/16/1998
	A3	5,547,382		Yamasaki et al.	08/20/1996
	A4	5,466,213		Hogan et al.	11/14/1995
	A5	5,334,027		Wherlock	08/02/1994
	A6	5,309,140		Everett, Jr., et al.	05/03/1994
	A7	5,299,810		Pierce et al.	04/05/1994
	A8	5,275,174		Cook	01/04/1994
	A9	5,271,290		Fischer	12/21/1993
	A10	5,240,417		Smithson et al.	08/31/1993
	A11	5,212,473		Louis	05/18/1993
	A12	5,078,152		Bond et al.	01/07/1992
	A13	5,038,089		Szakaly	08/06/1991
	A14	5,035,242		Franklin et al.	07/30/1991
	A15	5,022,407		Horch et al.	06/11/1991
	A16	5,019,761		Kraft	05/28/1991
	A17	4,934,694		McIntosh	06/19/1990
	A18	4,930,770		Baker	06/05/1990
	A19	4,891,764		McIntosh	01/02/1990
	A20	4,794,392		Selinko	12/27/1988
	A21	4,713,007		Alban	12/15/1987
	A22	4,708,656		de Vries et al.	11/24/1987
	A23	4,599,070		Hladky et al.	07/08/1986
	A24	4,581,491		Boothroyd	04/08/1986
	A25	4,513,235		Acklam et al.	04/23/1985
	A26	4,236,325		Hall et al.	12/02/1980
	A27	4,160,508		Salisbury, Jr.	07/10/1979
	A28	3,911,416		Feder	10/07/1975
	A29	3,903,614		Diamond et al.	09/09/1975
	A30	3,902,687		Hightower	09/02/1975
	A31	3,623,064		Kagan	11/23/1971
	A32	3,517,446		Corlyon et al.	06/30/1970
	A33	3,497,668		Hirsch	02/24/1970
	A34	3,220,121		Cutler	11/30/1965
JLL	A35	3,157,853		Hirsch	11/17/1964

## FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
JLL	B1		0 349 086	A1	Stork Kwant B.V.	01/03/1990	

<sup>1</sup> Unique citation designation number.

<sup>2</sup> See attached Kinds of U.S. Patent Documents.

<sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

<sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

<sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

FE 6 2003

Substitute for form 1449A/PTO

# **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

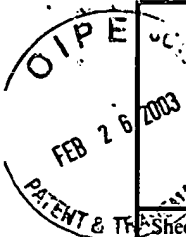
(use as many sheets as necessary)

**Complete if Known**

Sheet	2	of	3	Application Number	09/237,969
				Filing Date	January 27, 1999
				First Named Inventor	David ALEXANDRE et al.
				Group Art Unit	3714
				Examiner Name	J. Sotomayor
				Attorney Docket Number	IMMR-023/01US

## **OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
JSA	C1	Baigrie, "Electric Control Loading - A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990	
	C2	Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993	
	C3	Russo, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," <i>MIT Libraries Archives</i> pp. 1-131, May 1990, archived 8/14/90	
	C4	Brooks et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," <i>JPL Publication 85-11</i> , NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985	
	C5	Jones et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); <i>Experimental Brain Research</i> , Vol. 79, No. 1, pp. 150-156, 1990	
	C6	Burdea et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," <i>1993 IEEE International Conference on Robotics and Automation</i> , pp. 25-44, 05/02/1993	
	C7	Snow et al., "Model-X Force-Reflecting-Hand-Controller," NT Control No. NPO-17851; JPL Case No. 7348, pp. 1-4 with 45 pages of attachments, 06/15/1989	
	C8	Ouh-Young, "Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order No. 9034744, p. 1-369, 1990	
	C9	Tadros, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," <i>MIT Archive</i> , pp. 1-88, February 1990, archived 8/13/90	
	C10	Caldwell et al., "Enhanced Tactile Feedback (Tele-Taction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993	
	C11	Adelstein et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 1-12, 1992	
	C12	Gotow et al., "Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337	
	C13	Stanley et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 55-61, ASME 1992	
	C14	Russo, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 63-70, ASME 1992	
	C15	Kontarinis et al., "Display of High-Frequency Tactile Information to Teleoperators," <i>Telemanipulator Technology and Space Telerobotics</i> , Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993	
	C16	Patrick et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," <i>Cooperative Intelligent Robotics in Space</i> , Rui J. deFigueiredo et al, Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990	
	C17	Adelstein, "A Virtual Environment System For The Study of Human Arm Tremor," <i>Ph.D. Dissertation</i> , Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90	
	C18	Bejezy, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," <i>Science</i> , Vol. 208, No. 4450, pp. 1327-1335, 1980	
	C19	Bejezy et al., "Generalization of Bilateral Force-Reflecting Control of Manipulators," <i>Proceedings Of Fourth CISM-IFTOMM</i> , Sep. 8-12, 1981	
	C20	McAfee et al., "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," <i>JPL 1988</i> , JPL D-5172	
	C21	Minsky, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," <i>Ph.D. Dissertation</i> , MIT, June 1995, archived 7/6/95	
	C22	Jacobsen et al., "High Performance, Dexterous Telerobotic Manipulator With Force Reflection," <i>Intervention/ROV '91 Conference &amp; Exposition</i> , Hollywood, Florida, May 21-23, 1991	
	C23	Shimoga, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," <i>Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration</i> , Rensselaer Polytechnic Institute, Sep. 30- Oct. 1, 1992	
	C24	IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990	
	C25	Terry et al., "Tactile Feedback In A Computer Mouse," <i>Proceedings of Fourteenth Annual Northeast Bioengineering Conference</i> , University of New Hampshire, March 10-11, 1988	
	C26	Howe, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," <i>Proceedings of the 1992 IEEE International Conference on Robotics and Automation</i> , Nice, France, May 1992	
	C27	Eberhardt et al., "OMAR - A Haptic display for speech perception by deaf and deaf-blind individuals," <i>IEEE Virtual Reality Annual International Symposium</i> , Seattle, WA, Sep. 18-22, 1993	
JSA	C28	Rabinowitz et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987	



Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet

3

of

3

*Complete if Known*

Application Number	09/237,969
Filing Date	January 27, 1999
First Named Inventor	David ALEXANDRE et al.
Group Art Unit	3714
Examiner Name	J. Sotomayor
Attorney Docket Number	IMMR-023/01US

<i>JS</i>	C29	Bejczy et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference, The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980	
	C30	Bejczy et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," <i>SOAR '89 Workshop, JSC</i> , Houston, TX, July 25-27, 1989	
	C31	Ouhyoung et al., "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," <i>IEEE Transactions on Consumer Electronics</i> , Vol. 41, No. 3, August 1995	
	C32	Marcus, "Touch Feedback in Surgery," <i>Proceedings of Virtual Reality and Medicine The Cutting Edge</i> , Sep. 8-11, 1994	
<i>JS</i>	C33	Bejczy, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

162125 v1/RE  
3H3H011.DOC

<sup>1</sup> Unique citation designation number.

<sup>2</sup> Applicant is to place a check mark here if English language Translation attached.

161556 v1/RE  
3GN\_011.DOC

RECEIVED  
FEB 26 2003  
TECHNICAL SERVICES R3700

*John L. Sotomayor*

*4/23/03*